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Telecommuting and Work From Home: Impacts on Vehicle Miles Traveled

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Qualifications

- Almost three decades studying travel behavior
- President, Association of Collegiate Schools of Planning
- Among top 20 most cited urban planning scholars, past five years
- Fellow of:
  - Homer Hoyt Institute of Real Estate
  - Regional Science Association International

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Outline

- Answers to questions received in advance
- Work from home and telecommuting
- Literature on telecommuting
- Telecommuting in the context of other policies that encourage driving reduction
- Concluding thoughts

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Questions

1. If a four-day workweek were to be implemented, would we likely see a significant decrease in traffic?

   Let's be cautious. Telecommuting can help but it is not a silver bullet. If working from home in L.A. County increased fivefold from the 2018 level, we could expect a reduction of household driving from 0.8% to 2.4%. As of 2018, only 1.8% of L.A. County residents work from home. Traffic reduction, not VMT reduction, could be larger in locations with bottlenecks.

2. How would a four-day workweek impact the urban economic growth patterns in major cities? Would we see economic growth due to people having newfound free time to spend on other activities?

   No. Persons consume based on their income, not on their free time.

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Questions (continued)

3. What other effect might this have on communities within Los Angeles, especially those that are a majority of people of color?

A 4-day work week or telecommuting is not well suited to many communities of color. I recommend a more purposeful equity-based approach that focuses first on barriers such as child care, irregular work hours, and limited transportation and broadband internet access.

4. Do you think the implementation of this policy would be feasible in Los Angeles?

Not in the near term. Telecommuting rates have consistently lagged expectations. Telecommuting should be part of a long-term transportation plan for the region.

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Work from Home and Telecommuting

- U.S. Census commute data (journey to work) asks about “work from home” – which is the answer to “what is your primary mode of transportation to work during survey week”
- Studies of telecommuting typically survey employees who work at home a few days per week (1 to 2 days per week is the norm)
- Work from home might not be the same as telecommuting, but the data can confound the two

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Telecommuting: What do we know?

Driving (VMT) reduction on days telecommuting →	How many days per week will a telecommuter telecommute? →	How many persons will telecommute?
50% to 75% reduction on telecommute day →	Telecommuters typically telecommute 1 to 2 days per week →	Most recent census data (2014-2018 ACS) indicate 1.8% of persons in L.A. County work from home

Source: Boarnet and Handy, Policy Brief on the Impacts of Telecommuting Based on a Review of the Literature, California Air Resources Board, 2013, available at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/research-effects-transportation-and-land-use

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How much VMT reduction can we get from telecommuting?

- Estimate is that on telecommuting days total VMT can decline by 50% to 75% - but most persons telecommute a couple of days a week and only about 2% of persons telecommute.
- If everyone telecommuted 1 day per week, that would be an approximate 10% to 15% reduction in VMT.
- But note that 100% telecommute rate is much larger than current 1.8%. Working from home has increased in L.A. county by 0.4 percentage points in the past ten years. What is a reasonable telecommute rate?
- What about an approximately five-fold increase in telecommuting, from 1.8% to 10%, at 1 or 2 days per week for those who telecommute? (Still very optimistic.) That would be a 0.8% to 2.4% VMT decrease.

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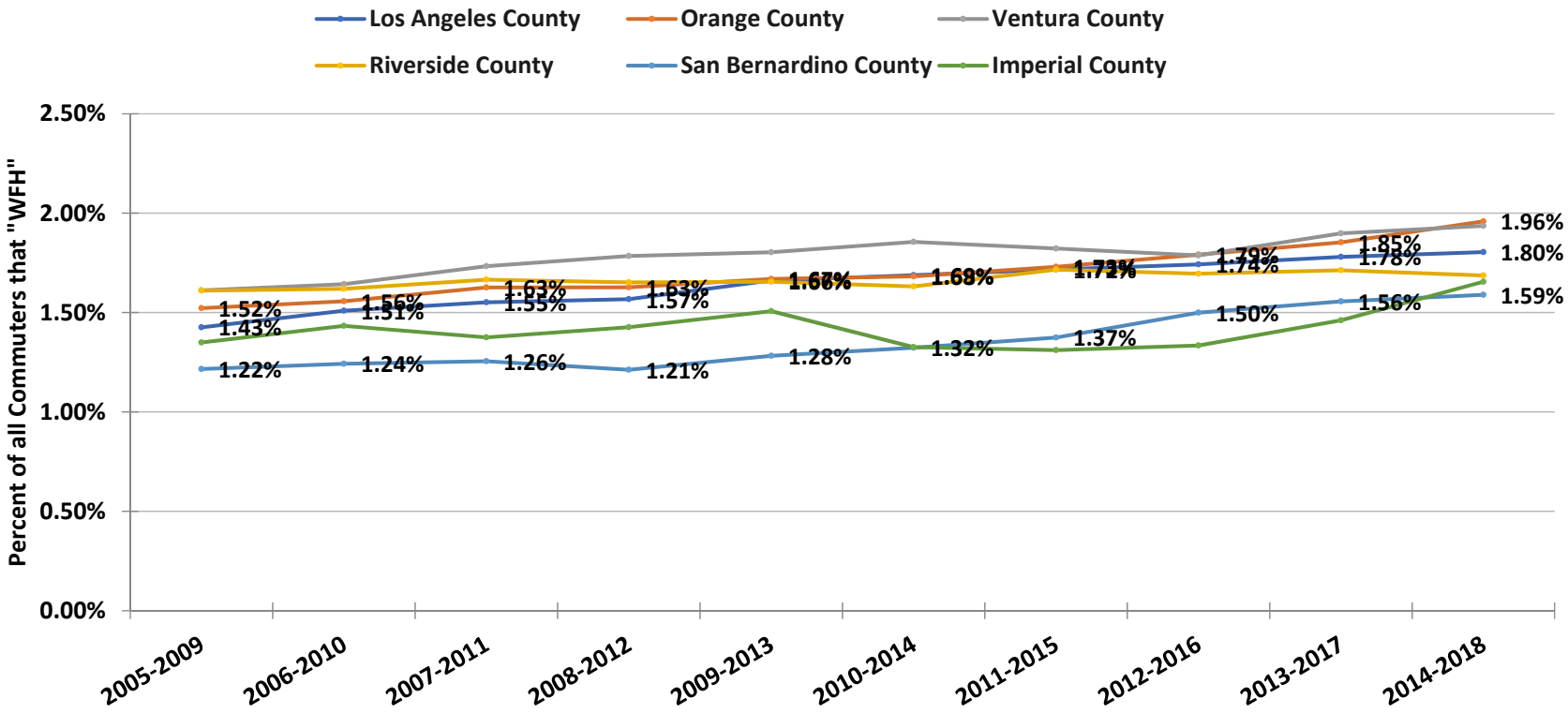
Southern California (SCAG Region) Work from Home (fraction all commuters)

Southern California Counties % "Work from Home" as percent of all residents answering "journey to work" question, American Community Survey



U.S. Census, ACS Data Collection Year

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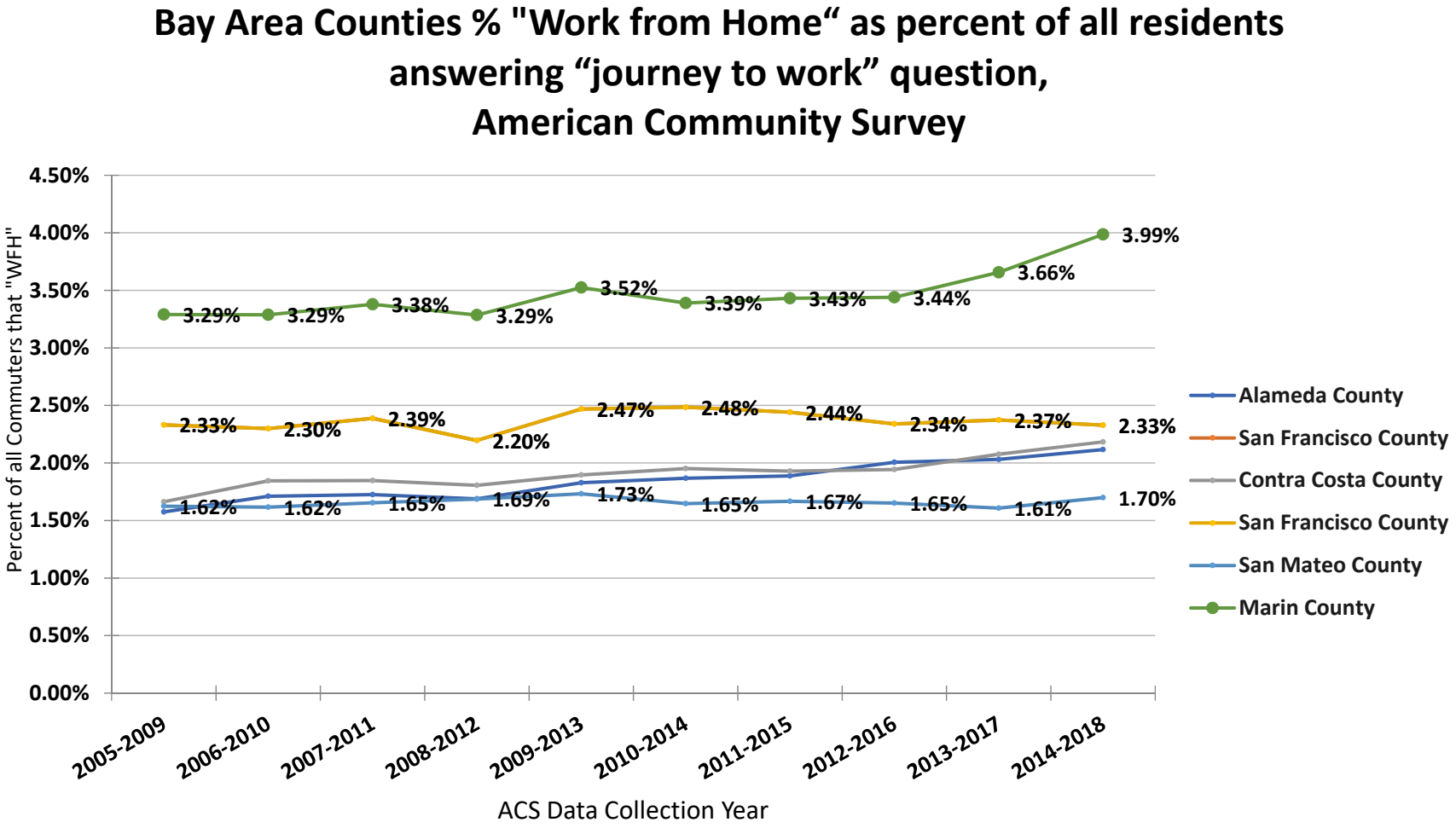
Comparison, Bay Area Counties Work from Home (% of commuters)



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Why don't more persons telecommute? Possible reasons

- They are not allowed to.

  As of 2009, only 14 percent of U.S. workers were allowed to work at home – considerably fewer did. (M. Rhoads, The Flexible Workplace: Regional Tendencies and Daily Travel Implications, USC Ph.D. dissertation, 2015)

- Their jobs do not allow it.

  Retail, service, production jobs that require face-to-face contact.

- Other constraints
  - **Employee constraints:**
  - Shift work and constraints working from home at non-standard hours
  - Irregular employment or part-time hours
  - Child care needs
  - **Employer constraints:**
  - Worker productivity
  - Team work
  - Traditional management techniques

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Other policies that reduce driving

- From Boarnet and Handy, "A Framework for Projecting the Potential Vehicle Miles Traveled Reduction from State-Level Strategies in California" National Center for Sustainable Transportation white paper, 2017, available at https://escholarship.org/uc/item/2z48105j.
- Analyzed VMT reduction effect from:
  1. Pricing
  2. Infill development
  3. Infrastructure and transit investment
  4. Travel demand management (includes telecommuting)

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How effective might other policies be?

1. **Pricing**

   A VMT (mileage) fee that replaces the fuel tax can **reduce driving 11-15%** (Boarnet and Handy at https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/research-effects-transportation-and-land-use and Rufolo, Anthony M., and Thomas J. Kimpel. 2008. "Responses to Oregon's Experiment in Road Pricing." Transportation Research Record: Journal of the Transportation Research Board 2079,1(12): 1-7.)

2. Infill development

   A household living in the core of L.A. County (Westside to downtown to Long Beach and into far north Orange County) **drives 18% to 33% less** than household living in Riverside, holding other household characteristics the same. Accounting for synergistic policies (density, transit service, street design, land use mix), the effect can be as large as 75% VMT reduction from infill. (Boarnet and Handy at https://escholarship.org/uc/item/2z48105j and M. Boarnet and X. Wang, "Urban spatial structure and the potential for vehicle miles traveled reduction: the effects of accessibility to jobs within and beyond employment sub-centers," Annals of Regional Science, vol. 62, no. 2, pp. 381-404, 2019.

3. Infrastructure and transit investment

   Doubling transit frequency can **increase transit ridership by 50%** (Boarnet and Handy, ARB brief and Evans, J.E. (2004). Traveler Response to Transportation System Changes: Chapter 9 - Transit Scheduling and Frequency. TCRP Report 95, Transit Cooperative Research Program, Transportation Research Board, Washington, DC.)

4. Travel demand management (includes telecommuting)

   Moderate effect – less impactful than pricing and infill development, due to lower take-up rate of, e.g., telecommuting. Recall **unrealistic upper bound of 10% - 15% VMT reduction – even 1-2% implies much faster telecommuting growth than seen in the past**. (Boarnet and Handy at https://escholarship.org/uc/item/2z48105j)

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Focus on equity first

- Work from home favors workers who can work from home:
  - Knowledge workers
  - Persons with fewer or flexible child or family care responsibilities
  - Persons with access to information technology resources
- Work from home is more difficult for workers who:
  - Have to be present at the workplace
  - Have demanding family care responsibilities
  - Have irregular job schedules or part-time or informal jobs
  - Have poor information technology resources